National Institute of Environmental Health Sciences

The ancillary benefits from climate policy in the United States

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Abstract:

This study investigates the benefits to human health that would occur in the United States (US) due to reductions in local air pollutant emissions stemming from a federal policy to reduce greenhouse gas emissions. In order to measure the impacts of reduced emissions of local pollutants, this study considers the Warner-Lieberman bill (S.2191) of 2007 and the paper considers the impacts of reduced emissions in the transport and electric power sectors. This analysis provides strong evidence that climate change policy in the US will generate significant returns to society in excess of the benefits due to climate stabilization. The total health-related co-benefits associated with a representative climate policy over the years 2010-2030 range between $103 billion and $1.2 trillion in present value terms. Much of the co-benefit stems from between 32,000 and 189,000 avoided premature mortalities associated with exposure to PM(2.5) and O(3). Most of the co-benefits are due to reduced emissions of SO(2) from coal-fired power plants since these are an important contribution to ambient concentrations of PM(2.5). Among the most important determinants of co-benefits is the relationship between climate policy and existing policies governing SO(2) discharges from coal-fired power generation capacity. If SO(2) emissions are permitted to remain at current levels, total co-benefits are cut by 65%. We find that the co-benefit per ton of CO(2) emissions ranges between $1 and $77 depending on modeling assumptions and year.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Unspecified Exposure

Air Pollution: Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): SO2; NOx; VOC; NH3

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

United States

Health Co-Benefit/Co–Harm (Adaption/Mitigation): ☑

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Cost/Economic, Exposure Change Prediction, Outcome Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Policy/Opinion, Research Article

Timescale: ☑

time period studied

Medium-Term (10-50 years)